MINWAX®

PROJECT **2**

WOODWORKS: INTERMEDIATE 1996-1997

CHIPPENDALE MIRROR

Built from solid mahogany and ribbon stripe plywood, this framed mirror is a beautiful wall piece that is fashionable as well as functional. Stained and finished properly, it captures the Chippendale style renowned for its classic charm. It's an excellent project choice for intermediate woodworking students because it requires them to be accurate as well as patient: two qualities every polished woodworker must possess.

This project presents the opportunity not only to practice and hone basic woodworking skills, but also to learn and master such intermediate woodworking skills as measuring, laying out stock, creating and transferring a design template, cutting with a scroll saw, using stationary and portable power tools, creating and using a jig, and achieving a professional-looking finish.

TOOLS REQUIRED:

- Pencil
- Compass and/or French curve
- Ruler (zigzag or tape)
- Combination square
- Assorted files (round and flat)
- Hammer
- Mallet
- Block plane
- Assorted clamps (C, handscrew, etc.)
- Table saw with dado head set
- Jointer
- Sanders (stationary belt, random orbit, pad)
- Router (1/2" straight cutter bit)
- Drill press
- Safety glasses
- Assorted bits

MATERIALS REQUIRED:

See Shopping and Cutting Lists

FINISHING PRODUCTS:

Finish Recommended For This Project

- MINWAX® POLYSHADES® One-Step Stain & Polyurethane

Alternate finish choices (Choose one)

- MINWAX® WOOD FINISH™
- MINWAX® Wipe-On Poly

Miscellaneous

- MINWAX fine finishing brushes
- Clean rags
- Fine steel wool
- Paint thinner, if required
- Water-filled metal container with cover
- MINWAX™ Wood Glue
- MINWAX™ Sanding Blocks

BEFORE YOU BEGIN

It is imperative that you select only defect-free stock for this project, since there is very little wood used and the handsome trim shape will draw attention to itself. If your local lumberyard does not stock such materials, you can order it from one of the well-established mail order houses that supply woodworking materials. Discuss this option with your instructor.

PROCEDURE:

I. Frame: Layout, Cutting, Assembly

BUILDER'S TIP: *Whenever you build a piece of furniture using exotic woods, it is recommended that all individual parts be cut and installed so the surface grains "run" in the same direction. By doing so, you'll maintain the structural and esthetic integrity of the piece once it's assembled. This is done in this project, for example, to achieve the visual impression that the scrollwork is cut from a single piece of wood.*

1. Cut out four frame members (parts E and F; see diagram for dimensions). The easiest way to do this is to rip one 4 ft. length of stock to size. Sand the pieces smooth using 100-grit sandpaper, then plough the rabbets (1/4" deep x 3/8" wide) that will receive the mirror.
2. Trim four frame parts to exact length, with 45 degree miter cuts on each end.
3. Construct the jig for cutting the four spline grooves. Note: Make several test cuts using scrap wood to ensure accuracy of cuts.
4. When satisfied with jig, cut spline grooves on each end of frame parts E and F.

5. Using the table saw and dado head with 1/8" blade, reposition the rip fence and carefully cut the 1/4" x 1/4" grooves in parts E and F (see diagram), which will receive the scrolled pieces (Parts A, B, C and D).
6. Lay out and cut four splines (see diagram for dimensions).
7. Test assemble frame (without glue) to check for fit and square.
8. When satisfied, assemble frame using small amount of glue. Hold pieces in place with clamps positioned so that they will not interfere with the spline installation.
9. Apply small amount of glue to all surfaces of the first spline and insert into first groove. Gently tap spline into place until the shaped inside corner is flush with inside edge of rabbets. Carefully wipe away any excess glue.
10. Repeat for three remaining splines.
11. Set the clamped frame assembly aside to dry overnight.

II. Scrollwork Pieces: Layout and Cutting

1. Create paper patterns for the four scroll pieces (parts A, B, C, D - see diagrams for design, scale and dimensions). Transfer patterns to heavy cardboard or 1/8" plywood to create the design templates. When satisfied, carefully cut out templates using a scroll saw or saber saw equipped with a fine-tooth wood cutting blade. Remember to cut the bottom corners at 45 degrees where pieces will be inserted into frame grooves.

BUILDER'S TIP: *Though cardboard can be easy to work with, most woodworkers prefer to make templates from thin plywood or hardboard because files and sandpaper can be used on edges to obtain perfect shape. And, they have a longer shelf life if you plan to make the pattern part of a permanent template collection.*

2. Using the templates, transfer the scroll shapes to the stock wood. Using the scroll saw and a fine-tooth blade, cut out pieces so all wood grain runs vertically.

Reminder: *You will need to cut two pieces each of parts C and D. Also, the templates used for parts A and B only represent one-half of each piece, so to create the complete pieces, you'll need to trace the template, flip it and trace again.*

3. Carefully sand all edges smooth, taking care not to change their shape. Next, sand surfaces smooth using the pad sander and 150-grit paper. Remember to sand with the grain to avoid cross grain scratches.

III. Frame and Scrollwork Assembly

1. Retrieve frame. Trim any exposed spline edges flush with frame.
2. Test fit scrolled parts, making sure the frame's corner joints are tightly closed. Make final adjustments to the scroll if necessary, using a file and sandpaper.
3. When satisfied with fit, apply a small amount of glue to all mating surfaces and reassemble. Fit piece with rubberbands to hold scroll parts in place while glue dries.
4. Set assembly aside to dry overnight.

IV. Mirror Retainer Panel

1. Lay out and cut the mirror retaining panel (see diagram for dimensions). Make certain you allow for the eight "ears" which will hold the panel and mirror in place.
2. Bore screw holes through the retaining panel's ears. Countersink screw holes for screw heads.
3. Retrieve frame/scrollwork assembly and remove rubber-bands. Position retainer panel on frame assembly's back side and hold in place. Using a pencil, carefully trace the position of the panel's ears on the frame. Remove retainer panel.
4. Use a router chucked with a 1/2" diameter straight cutter to rout the eight mortises in the frame that will receive the panel ears. Prepare the router by setting the straight cutter so it projects a mere 1/8" below the shoe. Then, rest the router shoe on the frame (without cutter touching wood) and align the cutter with lines for the first mortise. Start the router and slowly feed the cutter into the wood, using the pencil lines as your guide for where to stop.

BUILDER'S TIP: *Make sure the frame is securely clamped to the workbench so that both hands are free to control the router and so that the piece will not shift during this critical step.*

5. Repeat for seven remaining mortises.
6. Test panel for fit. Make any necessary adjustments to mortises and/or ears using a chisel or razor knife and sandpaper.

V. Final Assembly

1. Lay frame/scrollwork assembly flat, back side up.
2. Insert mirror. Position mirror retainer panel and secure with eight no. 6 flathead screws.
3. Install screw eyes and picture wire.

VI. Staining and Finishing

BUILDER'S TIP: *When it comes to staining and finishing, you can work with a stain-and-finish-in-one product, such as MINWAX® POLYSHADES®, or use the traditional two-step method (MINWAX® WOOD FINISH™ and MINWAX® Wipe-On Poly).*

Stain and Finish in One:

1. Sand surfaces smooth. Wipe with a tack cloth to remove dust.
2. Using quick release masking tape, carefully mask off the perimeter of the mirror so it will not be inadvertently affected by stain.
3. If using a soft wood such as pine, apply MINWAX® Pre-Stain Wood Conditioner according to label instructions. Wait 10 to 15 minutes, and wipe away excess using a clean, lint-free rag.
4. Within 2 hours apply MINWAX® POLYSHADES® color of your choice using a natural bristle brush. Stir well before and occasionally during use. Two coats are recommended for maximum beauty and protection. Brush on a thin, even coat in the direction of the grain. Be sure to maintain a "wet edge". Let dry 8 hours or more, then rub surface with fine

steel wool (grade 000 and finer). Remove all dust. Brush on a second thin coat. You may apply more than 2 coats if you want to deepen the color.

5. Allow piece to set for at least 24 hours.

Two-Step Method:

1. Sand surfaces smooth. Wipe with a tack cloth to remove dust.
2. Using quick release masking tape, carefully mask off the perimeter of the mirror so it will not be inadvertently affected by stain.
3. If using a soft wood such as pine apply MINWAX® Pre-Stain Wood Conditioner according to label instructions. Wait 10 to 15 minutes, and wipe away excess using a clean, lint-free rag.
4. Within two hours, apply the MINWAX® WOOD FINISH™ of your choice to all surfaces (even back) using a clean brush and with-the-grain strokes. Remember to stir the stain well. Allow stain to penetrate for 5 to 15 minutes, depending on desired tone. Wipe off excess with clean, lint-free rag.
5. If a darker tone is desired, let the first coat rest for four to six hours then repeat step #4 for a second coat. Allow stain to dry for eight hours before proceeding.
6. Shake MINWAX® Wipe-On Poly container before use. Put a small amount on a clean, soft, lint-free cotton cloth and rub into the wood.
7. Allow finish to dry for at least three hours (longer if conditions are humid); when dry, lightly sand again using 220-grit paper or fine steel wool and wipe clean.
8. Apply second coat and let dry.
9. Allow piece to cure for at least 24 hours.
10. Position and install picture wire.

VII. Clean Up

- If you have product left over, wipe the can rim so that product in the rim won't dry out and prevent the lid from forming a tight seal.
- Clean brushes used for oil-based finishes with mineral spirits.

VIII. PRODUCT SAFETY

DANGER! HARMFUL OR FATAL IF SWALLOWED. SKIN IRRITANT. COMBUSTIBLE. KEEP OUT OF REACH OF CHILDREN.

DANGER: Contains mineral spirits. Harmful or fatal if swallowed. Do not take internally. Skin irritant. Avoid contact with skin and eyes. Wear rubber gloves and safety glasses when handling. Combustible. Do not use or store near heat, sparks, flame or other source of ignition. Close container after each use. Avoid inhalation and use only with adequate ventilation. If using indoors, open all windows and doors to make sure there is fresh air movement. If you experience lightheadedness, dizziness or headaches, increase fresh air movement or leave the area. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

FIRST AID: If swallowed: Do not induce vomiting. Call physician immediately.

FOR SKIN CONTACT: Wash thoroughly with soap and water. If irritation persists, get medical attention.

FOR EYE CONTACT: IMMEDIATELY flush eyes thoroughly with water, then remove any contact lenses. Continue to flush eyes with water for at least 15 minutes. If irritation persists, get medical attention.

IF AFFECTED BY INHALATION: Immediately remove to fresh air. If symptoms persist, call physician.

IX. Safe Disposal of Rags & Waste

Please be mindful of the safe way to dispose of used rags and other waste. Rags, steel wool and other waste soaked with oil finishes may spontaneously catch fire if improperly discarded. Place rags, steel wool and waste immediately after use in a water-filled metal container. Tightly seal and then dispose of in accordance with local regulations. Be sure to keep the container out of reach of children.

FINISHER'S TIPS

- For a clean, sharp finish, all final passes with the brush or cloth should be made in the same direction as the wood grain.
- If additional surface protection is desired, apply a coat of MINWAX® Paste Finishing Wax over all exposed surfaces. Let stand for 10 minutes, then buff with a clean fiber brush (scrub brush). Finish buffing with a clean, lint-free rag.
- If you spot any minor imperfections in the wood (e.g. pinholes, surface scratches) resist the urge to use a wood filler before applying any stain. Conventional wood fillers may not absorb stain in exactly the same manner as adjacent wood, so the spot will become even more evident. Instead, wait until finish has dried completely and then use MINWAX® WOOD PUTTY™ or MINWAX® WOOD FINISH™ STAIN MARKER™ for touch-ups.
- It's critical that all stains and finishes be allowed to dry thoroughly between coats. Remember, drying times may vary due to humidity and other climatic conditions

Materials Shopping List, nominal dimensions

Note: The project prototype was constructed from ribbon stripe plywood and solid mahogany. If different woods are substituted, check for dimensional differences in stock.

A, B	Scroll, top and bottom	1/8 x 12 x 13"	1 piece
C, D	Scroll, four side pieces	1/8 x 8 x 10"	1 piece
E, F	Frame parts	1 x 2 x 48"	1 piece
G	Splines	From scrap	
H	Mirror retainer panel	1/8 x 10 x 14"	1 (plywood)
I	Mirror*	1/8 x 8-1/4 x 11-5/8"	

Cutting List, actual dimensions

A	Scroll, top	1/8 x 6-1/2 x 9-3/4"	1 required
B	Scroll, bottom	1/8 x 5 x 9-3/4"	1required
C	Scroll, sides (bottom)	1/8 x 2 x 6"	2 required
D	Scroll, sdes (top)	1/8 x 2-1/2 x 6-1/2"	2 required
E	Frame sides	3/4 x 1-1/8 x 13-1/8"	2 required
F	Frame, top and bottom	3/4 x 1-1/8 x 9-3/4"	2 required

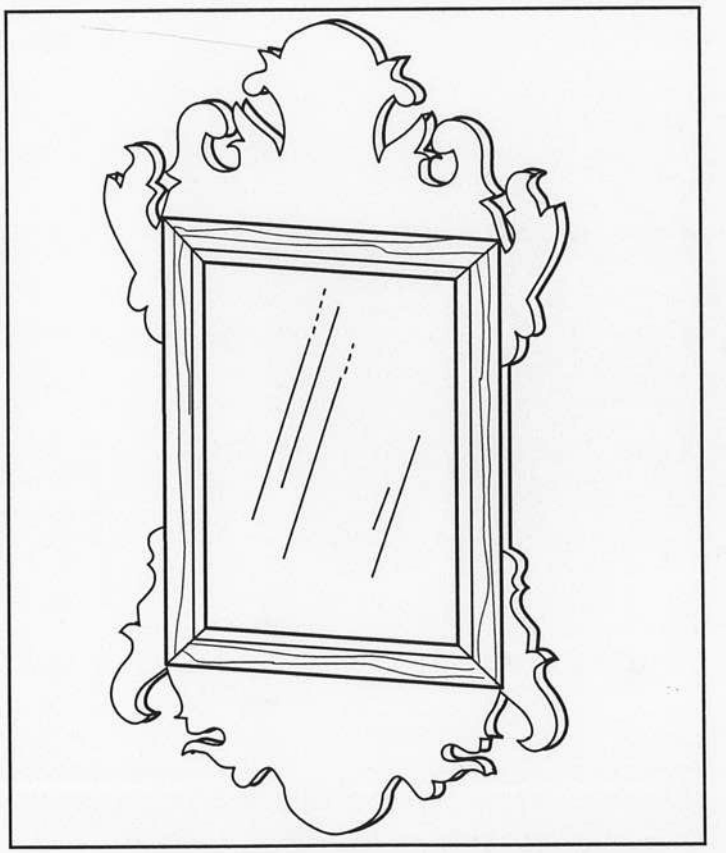
* Double check measurements between frame rabbets after piece is assembled before cutting mirror to size.

Miscellaneous:

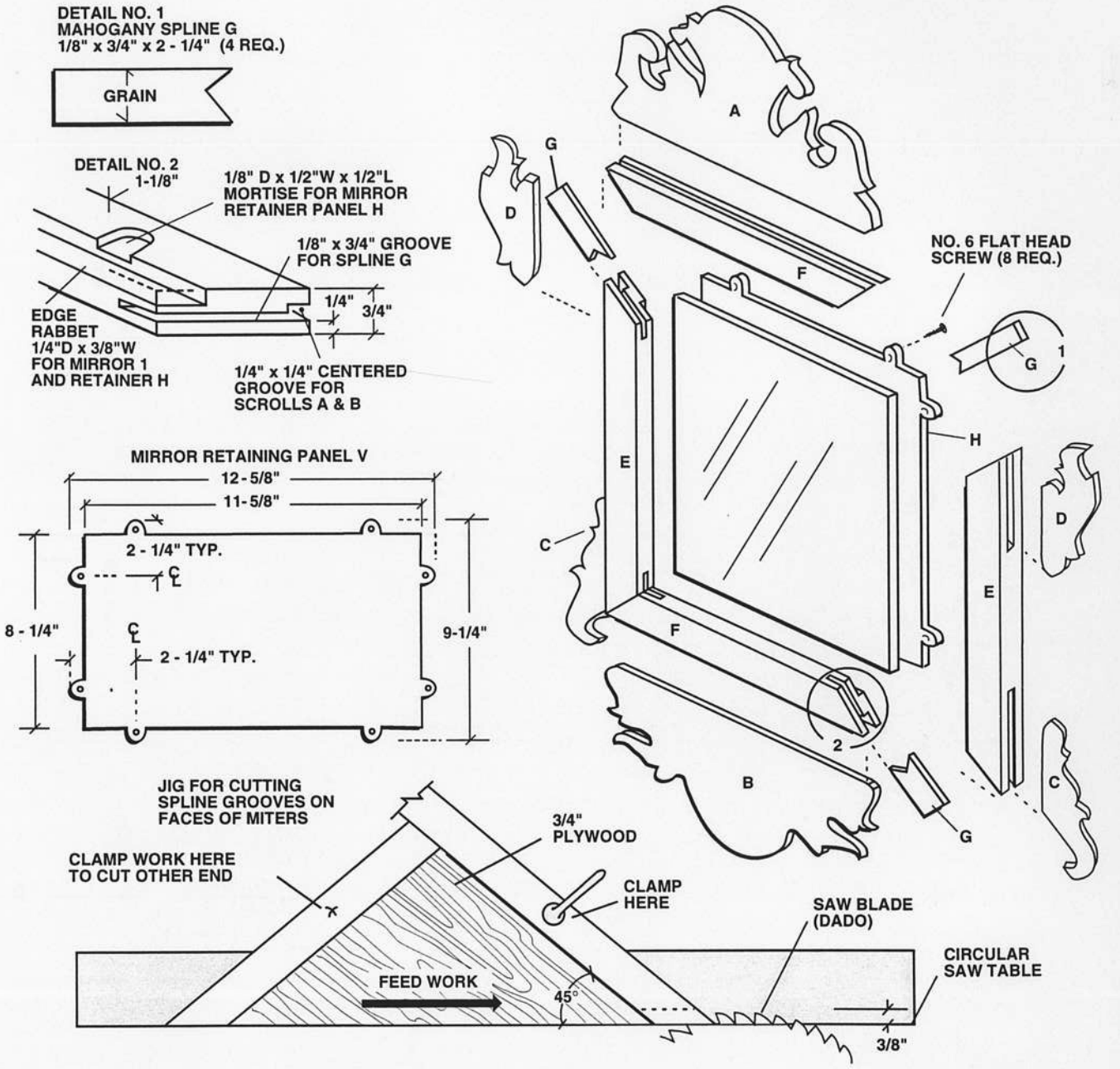
MINWAX Professional Strength Wood Glue, wide quick release masking tape, sandpaper (100- through 220-grit), rubberbands (large enough to go around assembled piece), tack cloth, MINWAX fine finishing brushes, clean rags, fine steel wool, mineral spirits, MINWAX™ WOOD FINISH™ STAIN MARKERS™, water-filled metal container with cover.

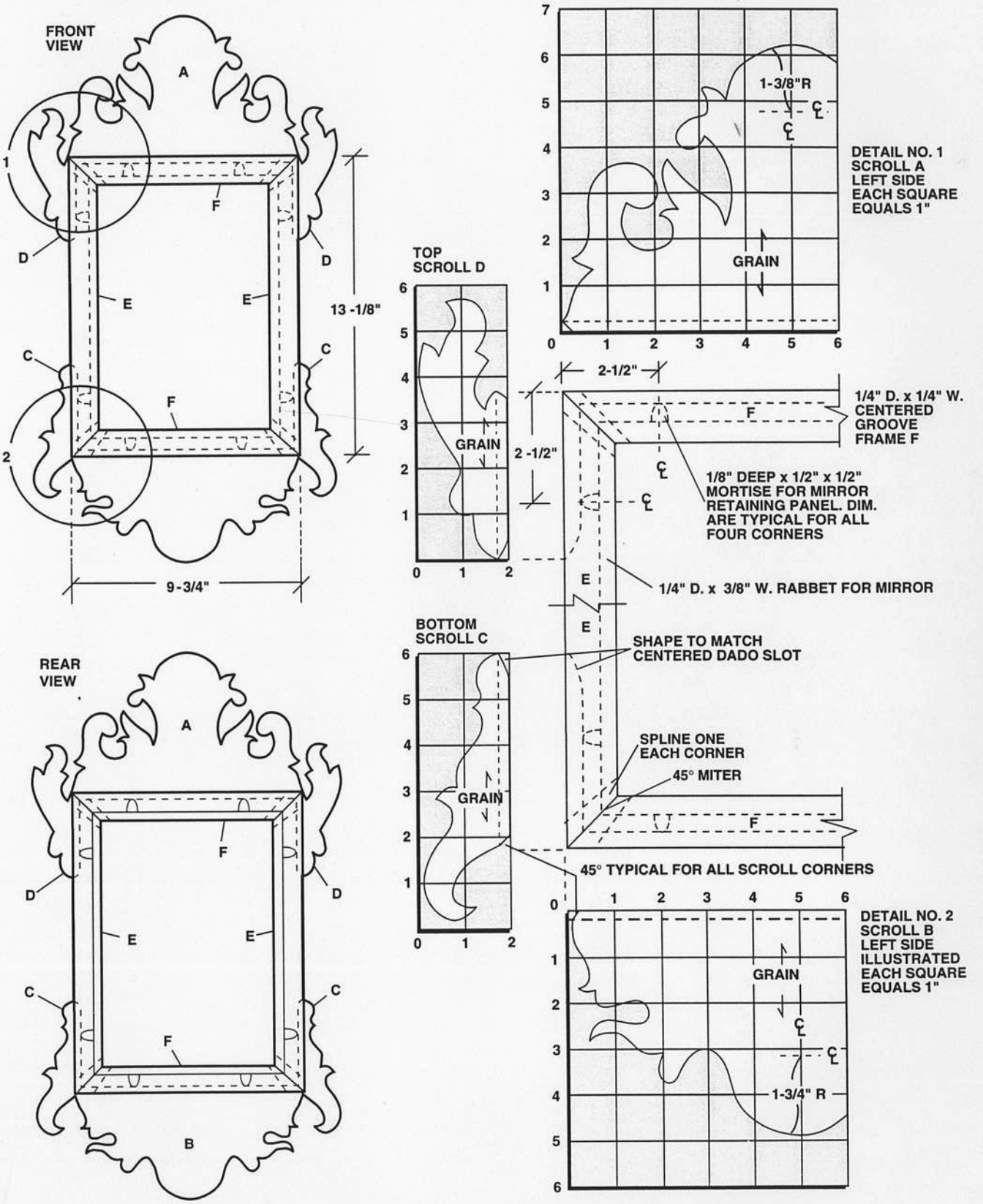
Hardware:

Eight no. 6 1/2" flathead screws, Two no. 16 screw eyes, picture wire.



COMPLETED PROJECT


DETAIL NO. 1
MAHOGANY SPLINE G
1/8" x 3/4" x 2 - 1/4" (4 REQ.)
GRAIN
DETAIL NO. 2
1-1/8"
1/8" D x 1/2"W x 1/2"L
MORTISE FOR MIRROR
RETAINER PANEL H
1/8" x 3/4" GROOVE
FOR SPLINE G
1/4"
3/4"
EDGE
RABBET
1/4"D x 3/8"W
FOR MIRROR 1
AND RETAINER H
1/4" x 1/4" CENTERED
GROOVE FOR
SCROLLS A & B
MIRROR RETAINING PANEL V
12 - 5/8"
11 - 5/8"
2 - 1/4" TYP.
8 - 1/4"
9-1/4"
2 - 1/4" TYP.
A
G
D
F
NO. 6 FLAT HEAD
SCREW (8 REQ.)
G
1
H
E
C
D
E
F
2
B
C
G
JIG FOR CUTTING
SPLINE GROOVES ON
FACES OF MITERS
3/4"
PLYWOOD
CLAMP WORK HERE
TO CUT OTHER END
CLAMP
HERE
SAW BLADE
(DADO)
CIRCULAR
SAW TABLE
FEED WORK
45°
3/8"


FRONT VIEW
A
1
F
D
D
E
E
13 -1/8"
C
C
F
2
9-3/4"
REAR VIEW
A
F
D
D
E
E
C
C
F
B
TOP SCROLL D
GRAIN
BOTTOM SCROLL C
GRAIN
1-3/8"R
GRAIN
DETAIL NO. 1 SCROLL A LEFT SIDE EACH SQUARE EQUALS 1"
2-1/2"
2 -1/2"
1/4" D. x 1/4" W. CENTERED GROOVE FRAME F
F
1/8" DEEP x 1/2" x 1/2" MORTISE FOR MIRROR RETAINING PANEL. DIM. ARE TYPICAL FOR ALL FOUR CORNERS
1/4" D. x 3/8" W. RABBET FOR MIRROR
E
E
SHAPE TO MATCH CENTERED DADO SLOT
SPLINE ONE EACH CORNER
45° MITER
F
45° TYPICAL FOR ALL SCROLL CORNERS
GRAIN
1-3/4" R
DETAIL NO. 2 SCROLL B LEFT SIDE ILLUSTRATED EACH SQUARE EQUALS 1"